

**Notice of Allowability**

Application No.

10/050,762

Examiner

Belix M. Ortiz

Applicant(s)

MERUGU ET AL.

Art Unit

2164

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 9/14/2005.
2. ☒ The allowed claim(s) is/are 1-35.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some\* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date 2005/205
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

  
**CHARLES RONES**  
**SUPERVISORY PATENT EXAMINER**

**DETAILED ACTION**  
**EXAMINER'S AMENDMENT**

1. The following is an Examiner's statement of reasons for the indication of allowable subject matter: The prior art of record does not disclose, make obvious, or otherwise suggest the structure of the applicant's prediction program, prediction apparatus, and prediction method together with the other limitations of the independent claims.

The dependent claims being further limiting and definite are also allowable. Any comments considered necessary by applicant must be submitted no later than the payment of the Issue Fee and, to avoid processing delays, should preferably accompany the Issue Fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Authorization for this examiner's amendment was given in an interview with Robert Sokohl on December 5, 2005.

**AMENDMENT TO THE CLAIMS:**

Claims 31 and 34 have been amended. Claims 1 and 35 remain pending in the application.

**WHAT IS CLAIMED IS:**

31. (Currently Amended) A computer-implemented method for creating and/or modifying a dynamically update-able, searchable packet classification databank, comprising the steps of:

receiving a collection of packet classification rules, each packet classification rule being represented as a plurality of location coordinates;

selecting an index key based on a common location coordinate among the packet classification rules at a first level, ~~such as~~ to enable partitioning of said collection into

two or more siblings at a second level, wherein the coordinate value of said common location coordinate represents a feature whereby the composition of each sibling contains packet classification rules possessing a common feature; and

selecting an index key based on a second common location coordinate among said packet classification rules at said second level, ~~such as~~ to enable partitioning of at least one of said two or more siblings at said second level into two or more siblings at a third level,

wherein each of said selecting an index key step comprises the steps of:

measuring a difference in cardinality at each location coordinate that has not been selected previously as an index key; and

computing an optimization parameter for each location coordinate.

34. (Currently Amended) A computer-implemented method for creating and/or modifying a dynamically update-able, searchable packet classification databank, comprising the steps of:

receiving a collection of packet classification rules, each packet classification rule being represented as a plurality of location coordinates;

receiving at least one packet classification rule within said collection that has one or more location coordinates denoted as having a plurality of values;

selecting an index key based on a common location coordinate among said packet classification rules at a first level, ~~such as~~ to enable partitioning of said collection into two or more siblings at a second level, wherein the coordinate value of said common

location coordinate represents a feature whereby the composition of each sibling contains packet classification rules possessing a common feature; and

selecting an index key based on a second common location among said packet classification rules at said second level, ~~such as~~ to enable partitioning of at least one of said two or more siblings at said second level into two or more siblings at a third level,

wherein each of said selecting an index key step comprises the steps of:

measuring a difference in cardinality at each location coordinate that has not been selected previously as an index key; and  
computing an optimization parameter for each location coordinate.

### ***Reasons for Allowance***

2. Claims 1 -35 are allowed.

3. The following is a statement of reasons for the indication of allowable subject matter:  
the prior arts of records, neither anticipates nor renders obvious the following  
limitations as claimed:

As to claim 1, the prior art of records fail to anticipate or suggest a computer-implemented method for creating and/or modifying a dynamically updateable, searchable packet classification databank, comprising the steps of:

receiving a collection of packet classification rules, each packet  
classification rule being represented as a plurality of bit positions;

analyzing each of the plurality of bit positions to select a first bit position to partition the collection into at least two sets of siblings, wherein the analyzing includes applying at least one of empirical knowledge or a computed metric for each bit position to select the first bit position;

selecting an index key corresponding to the first bit position; and

analyzing each of the plurality of bit positions to select a second bit position to partition the at least two sets of siblings into subsets of siblings;

selecting an index key corresponding to the second bit position, together with the other limitations of the independent claims.

As to claim 22, the prior art of records fail to anticipate or suggest a packet classification system, comprising:

a first memory for receiving a collection of packet classification rules, wherein each packet classification rule is represented as a plurality of bit positions; and

wherein the mask constructor applies at least one of empirical knowledge or a computed metric for each bit position to select the bit position corresponding to each index key, and

wherein the mask constructor continues to select index keys to repetitively partition each set of siblings at a respective level into at least two sets of siblings at a lower level until reaching a partition threshold, together with the other limitations of the independent claims.

As to claim 30, the prior art of records fail to anticipate or suggest a computer program product comprising a computer useable medium having computer readable program code means embedded in the medium for causing a computer to classify packet flows, comprising:

wherein the first computer readable program code means selects each index key such that each index key corresponds to a bit position that enables partitioning of a set of packet classification rules into two or more sets of siblings at a lower level;

wherein the first computer readable program code means applies at least one of empirical knowledge or a computed metric for each location to select the bit position corresponding to each index key, and

wherein the first computer readable program code means continues to select index keys to repetitively partition each set of siblings at a respective level into at least two sets of siblings at a lower level until reaching a partition threshold; and

a second computer readable program code means for causing the computer to assemble the one or more index keys into a query key, together with the other limitations of the independent claims.

As to claims 31 and 34, the prior art of records fail to anticipate or suggest a computer-implemented method for creating and/or modifying a dynamically update-able, searchable packet classification databank, comprising the steps of:

selecting an index key based on a common location coordinate among the packet classification rules at a first level to enable partitioning of said collection into two or

more siblings at a second level, wherein the coordinate value of said common location coordinate represents a feature whereby the composition of each sibling contains packet classification rules possessing a common feature; and

selecting an index key based on a second common location coordinate among said packet classification rules at said second level to enable partitioning of at least one of said two or more siblings at said second level into two or more siblings at a third level,

wherein each of said selecting an index key step comprises the steps of:

measuring a difference in cardinality at each location coordinate that has not been selected previously as an index key; and

computing an optimization parameter for each location coordinate, together with the other limitations of the independent claims.

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Belix M. Ortiz whose telephone number is 571-272-4081. The examiner can normally be reached on Monday-Friday 9am-5pm.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

bmo

December 5, 2005

  
**CHARLES RONES**  
**SUPERVISORY PATENT EXAMINER**